Science 2002
Performance Definitions

Grade 11

Exceeded Level

With respect to the high school Michigan Science Curriculum Framework, a student who scored at the "Exceeded" level of the Michigan standards in science:

- demonstrated deep knowledge, understanding and skill in earth, life and physical science by generating or connecting the relationships among ideas and concepts across these branches of science.

- used his or her knowledge to describe and/or explain real-world events as well as understand prediction of future observations and outcomes.

- solved problems using scientific knowledge and information from resources such as tables, graphs and text.

- has analyzed and reflected about real-world situations using his or her science knowledge and understanding.

Students who performed at the "Exceeded" level:

- designed and critiqued science investigation methods including experimental methods; readily applied the scientific method (problem identification, background theory, hypothesis formation, controlled research methodology including measurement and data collection, analysis of results, formation of conclusion, discussion of results in light of existing theory); understood the limitations of measurement and inferences based on investigation results.

- developed abstract models of theory or explanation based on observed phenomena using scientific knowledge as well as patterns of change; models spanned across different subject areas (i.e., earth, life and physical science) when applicable.

- demonstrated skill to interpolate and extrapolate information from data based on expected outcomes or applicable theory; demonstrated complex reasoning skills regarding the short and long term advantages, risks and side effects from application of technology.

- understood strengths as well as detected the weakness in methods used to derive earth, life and physical science theory in order to support or question the validity of research design or scientific modeling.

- correctly, completely and thoroughly answered questions about earth, life and physical science without contradiction; answer provided adequate example, evidence or elaboration.

Science 2002
Performance Definitions

Grade 11

Met Level

With respect to the high school Michigan Science Curriculum Framework, a student who scored at the "Met" level of the Michigan standards in science:

- demonstrated knowledge, understanding and skill in earth, life and physical science by recognizing the relationships among ideas and concepts across these branches of science.
- used his or her own knowledge to describe and/or explain real-world objects or events.
- developed solutions for problems using scientific information from resources such as tables, graphs and text.
- evaluated and used evidence and reason to make scientific explanations.

Students who performed at the "Met" level:

- designed science investigation methods including experimental methods; applied the scientific method when conducting research; made accurate measurements and correct inferences based on research results.
- described or illustrated models or theory based on observed phenomena using scientific knowledge as well as scientific data and measures; models or theory focused on one area of science while showing some integration of earth, life and physical science concepts.
- made accurate estimates or reasonable predictions based on scientific knowledge, theory, and results from research; predicted or hypothesized the immediate advantages and disadvantages from application of technology.
- explained or described the strengths and weakness in earth, life and physical science models or theory; cited evidence from making research conclusions with understanding of the limits of the data when making predictions.
- provided complete answers to questions without contradiction; the answers were supported with some evidence or elaboration.

Science 2002
Performance Definitions

Grade 11

Basic Level

With respect to the high school Michigan Science Curriculum Framework, a student who scored at the "Basic" level of the Michigan standards in science:

- demonstrated a knowledge of earth, life and physical science; does not, however recognize relationships among these three branches of science.
- used his or her own knowledge to partially describe and/or partially explain real-world objects or events.
- gathered information for scientific problems from resources such as tables, graphs and texts.
- demonstrated a limited capacity to judge evidence or develop scientific reasons for explanation of observations and events.

Students who performed at the "Basic" level:

- contributed to science investigation methods including experimental methods; displayed some difficulty using the scientific method when carrying out research; generally made scientific measurements and recorded data while having some difficulty with measurement accuracy and selection of appropriate laboratory equipment.
- understood presentation of earth, life and physical science models or theory while having some difficulty deriving models or theory based on his or her scientific knowledge.
- made some obvious predictions based on general and scientific knowledge with some incorporation of theory or results from research; recognized the application of technology with general ideas of the underlying scientific concepts though revealed partial understanding of the advantages and risk associated with the application of the technology.
- generally understood the explanation or description of models and theory regarding earth, life and physical science; displayed a partial understanding of evidence needed to make a conclusion as well as a partial understanding of the limits of investigation methods.
- provided partially correct answers to questions that could include error or contradiction; answer lacked sufficient evidence or elaboration.